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January 7, 2008
VIA HAND DELIVERY

Ann Cole, Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: Aloha Utilities, Inc.; PSC Docket No. 060606-WS
Anion Exchange Report
Our File No. 26038.51

Dear Ms. Cole:

Attached, in accordance with the requirements of Order No. PSC-06-0270-AS-WU and the Settlement Agreement attached thereto, is the quarterly report on the progress of implementation of the anion exchange facilities.

As noted in the report, there is also an additional report entitled "Identification of A E Waste Disposal Alternative Strategies" included.

If you have any questions in this regard, please let me know.

Sincerely,

ROSE, SUNDSTROM & BENTLEY, LLP

F. Marshall Deterding
For The Firm

CMP _____
COM _____
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OPC _____
RCA _____
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FMD/tms
cc: Rosanne Gervasi, Esquire
Stephen G. Watford
David Porter, P.E.

Aloha Utilities, Inc.
Seven Springs Water System
Anion Exchange Implementation Project

Project Status Report Number 6
October 3, 2007 – January 4, 2007

Overview of Project Status

- During this quarter, Aloha received the two final reports from the University of South Florida. The first of these reports was received on October 5th and concentrated on AE waste generation and disposal. The second, which was received on November 15th, was a master report that provided detailed information concerning USF's work on this project in total.

- The first USF report provided the data necessary for Dr. Gomberg, Aloha's hydrogeologist, to complete his analysis of the potential impacts to groundwater, plants and soils in areas where reuse water is applied associated with the disposal of AE wastes to Aloha sanitary sewer system. Dr. Gomberg submitted his report to Aloha on October 14th.

- Dr. Gomberg's report indicated that the disposal of AE wastes to the sanitary sewer system would likely result in impacts to groundwater, plants and soils in the reuse areas.

- Upon receipt, review and discussion of Dr. Gomberg's report, Aloha and its consultants believed that potential FDEP permitting and rule compliance issues had developed and that a discussion with FDEP related to these issues should occur as soon as possible to assist Aloha and its consultants in determining what the scope of the potential permitting and rule compliance issues were.

- Dr. Gomberg and David Porter, P.E. attended a meeting with FDEP on October 30th to discuss these issues and to seek guidance related to permitting, future compliance of the Department's rules and potential for waivers, variances and/or exemptions for various Department Rules that might be useful in minimizing AE project impacts due to waste disposal issues.

- Based on the USF and Gomberg reports, Aloha's review of pertinent FDEP rules and discussions with FDEP, Aloha and its consultants came to the conclusion that disposal of all AE wastes by discharge to the sanitary sewer system raised concerns and that an alternative means of disposing of the AE wastes (i.e. transport of wastes for off-site treatment and/or disposal, partial disposal by discharge to sewer system and the remainder to off-site treatment/disposal, etc.) would need to be considered and studied. These possibilities have been discussed many times during the various PSC/OPC/Customer/Aloha meetings and negotiations held at the inception of the project and during subsequent quarterly and special meetings held with PSC/OPC/customers and Aloha.

- Aloha notified the PSC of these issues and a meeting with PSC/OPC/customers and Aloha was held on November 7th to discuss these issues. At this meeting Aloha stated that it would direct its consultants to determine what alternative AE waste disposal methods they could identify and prepare a technical memo outlining these alternatives and provide basic information on these alternatives for review and discussion at the next project quarterly meeting. In addition, to the extent possible in the short time available, Aloha's consultants stated that they would provide cost information associated with the alternatives if there were sufficient information to allow the development of such cost data.

- The technical memo providing the alternatives for disposing of the AE wastewater was completed by Aloha's consultants and is attached as a supplement to this report.

Work In-Progress and/or Completed This Period

The major tasks that the design, science and project management teams have been working on this quarterly period include:

A. The week of October 5th Aloha received the USF waste generation report. It was reviewed by Aloha's consultants and provided to Dr. Gomberg for his use in assessing related impacts of disposal of the AE wastes to the sanitary sewer system.

B. The weeks October 12th through November 2nd Dr. Gomberg completed his analysis and report. Aloha and its consultants reviewed the report. The implications of the data provided in the report were considered and discussed by Aloha's management team and its consultants. A meeting with FDEP was scheduled and attended by Dr. Gomberg and David Porter to discuss permitting and Department rule compliance and or waiver/variance/exemption issues. The PSC was notified of the waste disposal issues and a special meeting was scheduled to be held on November 7th to discuss them.

C. During the week of November 9th a meeting was attended by PSC/OUC/Customers/AUI to discuss the AE waste disposal issues. A copy of the USF waste generation and disposal report and the Gomberg report were provided to meeting attendees.

D. The weeks of November 16 through January 4th Aloha's consultants (David W. Porter, P.E. and Dr. Gomberg) worked to identify potential alternative AE waste disposal methods and the associated pros and cons of these alternatives and prepare a technical memo presenting these alternatives and associated costs where possible. A copy of the USF master AE project report was provided to PSC and OPC on December 12th.

E. A meeting was held at FDEP on December 19th to discuss the issues and the potential FDEP permitting, rule compliance and waiver/exemption/variance issues. Attending the meeting were PSC/OPC/Customer and Aloha representatives.

F. On January 2nd John Wharton and David Porter participated in a conference call with PSC staff to provide them with an update on the progress of identifying alternative AE waste disposal options.

Timetable for Future Activities

Due to the AE waste disposal issues which have arisen during the last quarter, additional time will be needed to allow for the short-listing of the alternatives, further study of alternative AE waste disposal method(s) which have been short-listed, selection of the most appropriate method, and development of the necessary engineering and permitting documents.

The overall delay that these waste disposal issues will cause can not be defined until the short-listing of the alternative method(s) of AE waste disposal is completed and the additional study related to further defining the implications of that method(s) has been completed.

Aloha Utilities, Inc.
Seven Springs Water System
Anion Exchange Implementation Project

Identification of AE Waste Disposal Alternative Strategies

Overview

As part of the work being completed to implement the use of anion exchange (AE) to remove hydrogen sulfide at five of Aloha's water plants, various pilot testing work was undertaken by the University of South Florida (USF) to determine the quantity and characteristics of the various waste streams that would be generated under various conditions.

USF submitted a final waste generation report to Aloha on October 5, 2007. Included in this report (which has been previously submitted to the PSC staff) were estimates of the changes in the quality of the reuse water produced at Aloha's existing wastewater treatment plant (WWTP) should the AE wastes be discharged to the sanitary sewer system for disposal. [Note: Disposal of the AE wastes to the sanitary sewer system was but one of the alternative means of disposal of these wastes which has been discussed at various PSC/OPC/Customer/AUI project negotiation, project development and evaluation and progress meetings since the inception of the project. However, being the least cost alternative previously identified, it has been the alternative chosen first for evaluation by USF and Aloha.]

Subsequently, USF submitted its master project report to Aloha in final form on November 15, 2007. This report provided not only information on AE waste generation and disposal (as was contained in the earlier USF waste generation report), but also provided detailed pilot plant research data and final design recommendations for the various AE process units. A copy of this report was provided to PSC and OPC previously.

Dr. David N. Gomberg, P.G., a groundwater hydrologist, was retained by Aloha to review the USF report and to evaluate the technical feasibility of disposing of the AE wastewater into the sanitary sewer system based on criteria provided in the Florida Department of Environmental Protection rules (62-610.865 and others) and his extensive experience in the development and operation of wastewater reuse systems. Once USF submitted its report to Aloha, Dr. Gomberg was able to undertake his analysis of the data provided in the USF report and complete his report. On October 14, 2007 Dr. Gomberg submitted his report to Aloha which detailed his analysis of the potential impacts to groundwater, plants and soils which may be experienced if the AE wastes were to be discharged to the sanitary sewer system resulting in the changes in reuse water quality (as projected in the USF report). A copy of this report has been provided to PSC and OPC previously.

Dr. Gomberg's report identified issues associated with long-term application of the reuse water after incorporation of the AE wastes raw wastewater stream that could potentially negatively impact groundwater quality, plants and soil conditions in the reuse water storage and application areas. As stated in Dr. Gomberg's report, it is very difficult to predict the magnitude of any potential impacts, however, the indicators were sufficient to warrant caution and concern.

These potential impacts have caused Aloha and its consultants to believe that disposal of the AE wastes to the sanitary sewer system in the quantities evaluated thus far is unwise. There is also sufficient uncertainty that it appears that Aloha may not be in a position to be able to make the certifications needed to apply for the necessary FDEP wastewater plant permit modifications.

This Technical Memo has been prepared to present the alternatives identified and to provide a framework from which the parties (PSC/OPC/Customers/AUI) can work to continue evaluation of the AE waste disposal options and select the most cost effective, technically feasible, time responsive option for final development and implementation.

AE Waste Disposal Alternatives Identified

The identified AE waste disposal alternatives are listed briefly below and discussed on the following pages:

1. Dispose of all AE wastes directly into the sanitary sewer system.
2. Truck all AE wastes off-site.
3. Truck a portion of the AE wastes off-site and discharge a portion to the sanitary sewer system.
4. Reduce the discharge of home-owner water softener wastes to sanitary sewer system and truck a portion of the AE wastes off-site and discharge a portion to the sanitary sewer system.
5. Initially construct the AE water plant upgrades at only selected sites and discharge the wastes to the sanitary sewer system and/or truck them off-site. When operating experience is obtained (with both the introduction of Pasco County bulk water into the water distribution system and the initial AE plants which have been placed into service) determine if the remainder of the AE plants continue to be required to solve the previously identified water quality issues and if so how the wastes can be disposed of.
6. Apply for and obtain FDEP groundwater quality exemptions, variances and/or waivers for chlorides and total dissolved solids (TDS) from the FDEP and utilize potassium chloride as the regenerate (to reduce sodium emissions) to allow discharge of the wastes to the sanitary sewer system.
7. Identify and construct brine treatment facilities that will allow for the reuse of the sodium chloride and thus reduce the quantity of wastes that will be generated and must be disposed of.

Discussion of Each Waste Disposal Alternative

Alternative 1 – Dispose of all AE Wastes to Sanitary Sewer System

This waste disposal alternative, if implemented, would likely be the least cost alternative provided no adverse impacts to groundwater, plants and soils in the reuse application areas materialized. Should these adverse impacts occur, this alternative might then become the highest cost alternative due to loss of treated wastewater disposal capacity (loss of reuse system use), regulatory actions and sanctions, and a number of other related repercussions.

As stated in Dr. Gomberg's report, this alternative poses the potential to raise the sodium, chloride and TDS concentrations in the groundwater located in the reuse storage and spray areas above FDEP mandated limits. In addition, the reuse water sodium, chloride and TDS concentrations would be increased to levels which would have the potential to create soil clogging and negatively affect certain plants. Again, this is discussed in Dr. Gomberg's report. Aloha and its consultants have determined that this alternative raises concerns.

Readers are directed to the USF reports and Dr. Gomberg's reports for detailed information related to the estimated quantities of AE wastes to be generated, the resulting reuse water quality changes projected and a detailed discussion of the potential impacts of those reuse water quality changes.

Alternative 2 – Truck All AE Wastes Off-Site

This waste disposal alternative, if implemented, is likely one of the higher costly alternatives. However, this alternative would also pose no risk of possible impacts to groundwater, plants and soils in the reuse water storage and application areas. Since this alternative would not require the discharge of any AE wastes to the sanitary sewer system, no wastewater plant permit modification would be required, thereby decreasing the time for project completion going forward.

Aloha contacted Pasco County representatives to determine if they had facilities to accept AE wastes and were told that they did not. Therefore, another means of transporting that disposing of the AE wastes had to be identified.

Aloha has identified one waste disposal company that has expressed interest in contracting for the transport and disposal of the AE wastes. Aloha's staff and its engineering consultant met with a representative of this company to discuss the project in detail and to provide him with an analysis of the AE wastes (which were provided in the USF) report. After reviewing the waste characteristics with the disposal facility where this firm has transported wastes of this type previously (The City of Tampa Wastewater Treatment System) the plant management rejected this waste stating that they have no additional capacity to accept this type of waste at their facility. Therefore, the contractor will need to deliver the Aloha AE wastes to Industrial Wastewater Services in Jacksonville, Florida for disposal, which is the closest facility that can accept these wastes.

The current best estimate of the cost of transporting the AE wastes, as provided by the waste disposal company, is approximately $0.55/gallon (the current cost on December 20, 2007) providing a minimum of 6,000 gallons of waste (a full tanker truck load) were transported each day.

The estimated quantity of heavy salt bearing wastes to be generated on an annual average daily basis from all five water plant AE systems is approximately 6,000 gallons per day. Please note that these values are based on pilot testing experience only and may differ from that actually experienced with the full-size units when they become operational and operation is optimized. The actual quantity of wastes generated may vary, either more or less, depending on a number of factors such as the actual quantity of salt required for backwash the actual quantity of finished water produced at each plant and actual run-times experienced before regeneration is required as discussed in the USF and Gomberg reports.

Therefore, the estimated cost per day to truck the waste from all five plants on an annual average daily basis based on the USF projected waste generation rates is $3,300/day or approximately $1.2M/year.

Should this option be selected, additional waste transport and disposal companies must be identified so that the contract for service can be bid to minimize costs and to insure that there were back-up sources of service. A bid specification package would need to be developed, potential contractors identified and contacted, a pre-bid information meeting held with all potential bidders, bids taken and evaluated, bid award made and contracts prepared and executed prior to starting up the AE units.

Alternative 3 – Truck A Portion of the AE Wastes Off-Site and Discharge a Portion to the Sanitary Sewer System

This waste disposal alternative is essentially a combination of the first two alternatives. Its selection would result in more operating cost than Alternative 1 (assuming no adverse affects on groundwater, plants and soils occurred) but less than Alternative 2. The technically feasibility of this alternative and its cost would depend on the ratio of the waste quantity discharged to the sanitary sewer system to that trucked off-site. The determination of that ratio will require additional study by Dr. Gomberg, Aloha's engineering consultants and management.

Additional discussions with the FDEP related to wastewater plant permit modifications (specifically increased groundwater monitoring and response protocol implementation) will be required if this alternative is selected. These additional monitoring and response protocols will provide the necessary "reasonable assurance" to Aloha's management and the FDEP that this alternative will not result in groundwater, plant or soil impacts that could not be identified and rectified prior to operational and/or regulatory sanctions. In essence, increased (or new) monitoring systems would need to be constructed and placed into service to identify potential problems that could not be reversed (by increasing trucking of AE wastes) prior to the development negative impacts to Aloha, the customers utilizing its reuse water, the groundwater quality, etc.

Aloha and its consultants would need to conduct additional studies and possibly conduct predictive groundwater modeling to allow for the development of increased chloride, sodium and TDS concentration targets for the reuse water. Aloha would base these target concentrations largely on the experience of Dr. Gomberg and his additional analysis of the conditions that are representative where the reuse water is currently stored and applied. These values would then allow Aloha to determine the ratio of waste discharged to the sewer system to that trucked. This in turn would determine the estimated cost for off-site trucking of the wastes.

As an example, if the wastes from Plants 8 and 9 were trucked and the wastes from Plants 2, Mitchell, and 6 were discharged to the sanitary sewer system, the resulting reuse water concentrations for sodium would be 217 mg/L and chloride 361 mg/L (based on the values in the USF report for annual average daily flow rates) which are substantially lower than the values estimated for these constituents when all plants discharge to the sanitary sewer system (sodium of 292 mg/L and chloride of 479 mg/L). However, even the reduced values are substantially greater then the Maximum Contaminant Level (MCL) for these constituents allowed by FDEP rule in groundwater (sodium of 160 mg/L and chloride of 250 mg/L). The question that must be answered to determine if this level of reduction in concentration is acceptable so as not to create negative impacts in the future. The answer to this question is quite complicated and not easily quantified since many factors (such as natural groundwater flow and dilution characteristics, rainfall quantities, etc.) which is why additional analysis by Aloha and its consultants will need to be undertaken if this option is chosen for possible implementation. However, for this example, let us assume that this reduction in sodium and chloride concentrations is acceptable, then the estimated quantity of wastes to be trucked off-site is reduced to 2,600 gallons/day which would have an annual cost of approximately $1,447/day or $0.53M/year. It is important to note that in order to continue to obtain the "full load" price of $0.55/gallon, the wastes at Plants 2, Mitchell and 6 would need to be stored such that a full truck load of waste (6,000 gallons) can be removed from the sites each time wastes are picked up. This will require a possible increase in the brine waste storage tank size at these plants.

As stated in the discussion for Alternative 3 above, the actual quantity of wastes generated may vary, either more or less, depending on a number of factors. These factors include: 1) the actual quantity of salt required for backwash, 2) the actual quantity of finished water produced at each plant, 3) the actual AE vessel run-times experienced before regeneration is required among others. Any variation in the actual quantities of waste generated will affect the allowable ratio of waste discharged to that trucked off-site and therefore will affect the costs associated with this alternative. Also, as stated earlier, the example above is just that, an example and may not be representative of the actual allowable ratio of waste discharged to that trucked. The determination of which will require additional analysis, consideration by Aloha and its consultants and discussions with the FDEP permitting staff.

Alternative 4 – Reduce the Discharge of Home-Owner Water Softener Wastes to Sanitary Sewer System and Truck a Portion of the AE Wastes Off-Site

This waste disposal alternative is essentially a variation of Alternative 3 and if selected for implementation the same level of study and discussions with FDEP would be required.

Since the concentration of sodium and chloride in Aloha's drinking water is quite low and the quantity of groundwater infiltration in the sanitary sewer system is quite low, it is likely that a large portion of the chloride and chloride found in the reuse water can be attributed to the discharge of home-owner water softener waste into the sanitary sewer system. Therefore, if these wastes were to no longer be discharged to the sanitary sewer system, the background concentration of sodium, chloride and TDS in the reuse water would be reduced. This in turn would allow more AE waste to be discharged to the sanitary sewer system and less to be trucked off-site reducing the associated costs.

The extent to which the home-owner softener wastes could be prevented from being discharged to the sanitary sewer system would dictate the increase in the allowable level of AE wastes could be discharged to the sanitary sewer system and the net reduction in the quantity and cost of trucking AE waste off-site.

Logistically, it may be very difficult, if not impossible, to develop a workable plan that would result in existing home owners no longer discharging their softener wastes to the sanitary sewers, therefore, although this alternative is attractive from a cost standpoint, it may take extensive time to accomplish or may be found to be realistically unworkable.

Alternative 5 – Initially Construct the AE Water Plant Upgrades at Only Selected Sites. This waste disposal alternative is essentially a variation of the others. The major difference is that instead of constructing all the AE plants concurrently, only selected plants (most likely Plants 8 and 9) would be constructed initially. Once these plants were placed into service the combined effect of the addition of Pasco County bulk water, the reduction in the quantity of water produced by Aloha's own plants and the addition of the AE systems at Plants 8 and 9 would be evaluated over time to determine if these changes to the water system alleviates the water quality issues reported by some of Aloha's customers. If the water quality concerns are alleviated, then the other plants would not be retrofitted to add the AE process units, and therefore, would not generate any wastes requiring disposal.

If only the wastes from Plants 8 and 9 were discharged to the sanitary sewer system, the concentration of sodium and chloride in the reuse water is estimated to be 236 mg/L and 393 mg/L respectively. These values may still be greater than desirable and a portion of the wastes may have to be trucked off-site as with other options. In addition, the additional studies and coordination with the FDEP (described for Alternative 3 above) would be required to determine the allowable quantity of waste that could be discharged to the sanitary sewer and the level of additional groundwater monitoring that would be required.

If this alternative were to be selected it generates an additional concern not directly related to the waste disposal issues. The AE systems remove hydrogen sulfide from the raw water at the water plants prior to primary disinfection with free chlorine and secondary disinfection with chloramines. The removal of this hydrogen sulfide is beneficial to the primary and secondary disinfection process. The control of chloramination process is much more difficult when hydrogen sulfide is present. The recently completed chloramination systems at the water plants were designed with intent that pretreatment for hydrogen sulfide removal would be installed

once the proper method to do so was selected (the selection process was underway when the design work for the chloramination systems was underway but it was not completed).

Alternative 6 – Apply For and Obtain FDEP Groundwater Quality Exemptions, Variances and/or Waivers

FDEP rules (62-520.500, 62-520.520, etc.) provide for means of applying for exemptions, waivers and/or variances to its groundwater standards under certain specific conditions. If such exemptions, waivers and/or variances could be obtained to allow for higher levels of chloride and TDS in the ground water in the reuse spray areas, it may be possible to modify the basic design of the AE systems to utilize potassium chlorine as a regenerate solution instead of sodium chloride which would reduce the concentration of sodium to acceptable levels. This may allow more of the AE wastes to be discharged to the sanitary sewer system resulting in potentially reduced trucking costs.

Additional discussions with the FDEP related to wastewater plant permit modifications (specifically increased groundwater monitoring and response protocol implementation) will be required if this alternative is selected. These additional monitoring and response protocols will provide the necessary "reasonable assurance" to Aloha's management and the FDEP that this alternative will not result in groundwater, plant or soil impacts that could not be identified and rectified prior to operational and/or regulatory sanctions. In essence, increased (or new) monitoring systems would need to be constructed and placed into service to identify potential problems that could not be reversed (by increasing trucking of AE wastes) prior to the development negative impacts to Aloha, the customers utilizing its reuse water, the groundwater quality, etc.

However, there are three major regulatory related problems which render the implementation of this alternative highly unlikely. FDEP stated at a recent meeting attended by PSC, OPC, customers and Aloha, that the granting of such exemptions, waivers and/or variances is extremely rare, that the time involved to obtain them is generally more that 18 months, that since Aloha's spray fields are located near potable water well fields it is very likely that any

exemption, waiver and/or variance would be protested by third parties and that it is unlikely that the Department would grant such rule exemption, waiver and/or variance requests.

In addition, the costs associated with the substitution of potassium chloride for sodium chloride would be substantial. The brine make up facilities design would have to be changed to accommodate the potassium chloride since potassium chloride storage and handling practices are much different than those used for sodium chloride. In addition, the cost of potassium chloride is approximately double that of sodium chloride. The labor requirements for handling potassium chloride is also substantially greater than that for sodium chloride.

It should be emphasized that obtaining a waiver, variance or exemption of the FDEP groundwater rules in and of itself may not completely remove any potential negative impacts to soils and plants.

Alternative 7 – Identify and Construct Brine Treatment Facilities That Will Allow for the Reuse of the Sodium Chloride

It may be technically possible to develop a method to recover the sodium chloride (salt) from the brine wastes and reuse it resulting in a reduction in the quantity of wastes that would need to be disposed of.

The development of new technology, or the adaptation of existing technology, to accomplish this salt reuse may take considerable study and therefore, time. In addition, it may be found that even if the proper technology can be identified, the associated financial costs may be high.

Other Factors to Consider

As was stated in the USF report and the Gomberg report, the estimated changes in reuse water quality presented in the two reports were based on conservative assumptions. The salt quantity needed for regeneration of the AE vessels has been assumed to be 6 pounds per cubic foot of resin. This is the minimum salt loading rate that the manufacturer will allow and still provide a process guarantee. However, the USF pilot plant data suggests that a lower rate (4 pounds per cubic foot) may be sufficient. Once the AE units are placed into service and their operation

optimized, if it is found that the lower salt loading rate is feasible than the generation of waste at the AE plant(s) where this lower value is usable will be reduced as well. This will result in a lesser quantity of sodium and chloride that will be contained in the waste generated allowing more of the waste to be discharged to the sanitary sewer system. Therefore, this may result in a reduction in the quantity of waste that must be disposed of by trucking off-site with a possible corresponding reduction in cost.

We have spoken with the AE equipment manufacturer about the possibility of reducing the quantity of water that would be needed for each regeneration (by utilizing more automated sensors and controls) thus lessening the quantity of waste generated that must be trucked off-site. The manufacturer is looking into this possibility and if it is found to be technically possible, the associated costs will need to be evaluated.

The background sodium and chloride values utilized to calculate the estimated quality of the reuse water in the USF report were conservative values. Given the potential serious repercussions associated with under estimating the impacts of the AE waste on the reuse water quality this was the proper course of action to take. However, once the AE units are in operation in the field, it may be found that actual values may be slightly lower than the values predicted. Even though slight, the cost of trucking the wastes off-site would be reduced if this were found to be the case.

Recommendation

I recommend that Aloha, PSC, OPC and the customer representatives review this document and collectively chose which alternative(s) presented here will receive the additional study necessary to determine a proper course of action which will allow the AE implementation project to move forward.